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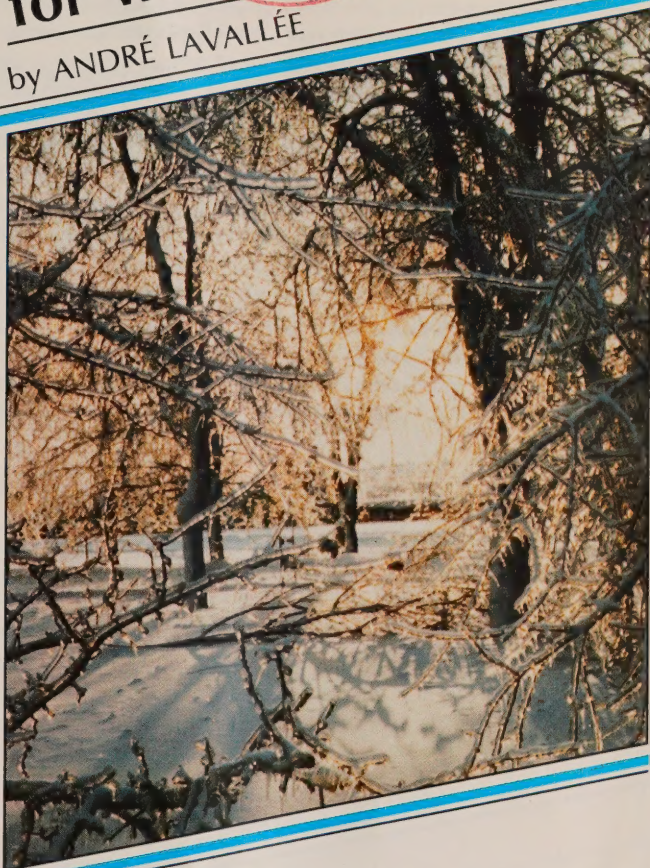
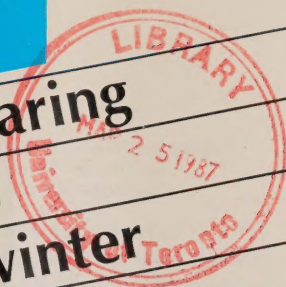
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Preparing trees for winter

by ANDRÉ LAVALLÉE



(Photo: C. Monnier)

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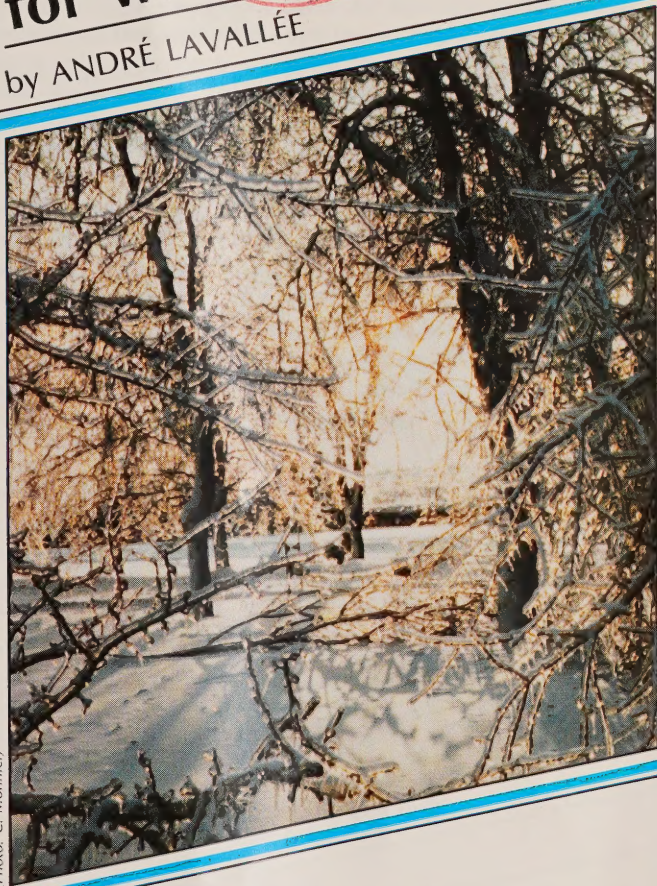
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Cette publication est aussi disponible en français sous le titre
«Protection pré-hivernale des arbres.»

***Cover. Canadian winters can produce
charming scenery but their severity re-
quires some protection for ornamentals.***

There are several reasons why ornamental trees have shorter life spans than the same species in a forest environment. Among them are adverse winter conditions. Although winter conditions are similar or even more severe in the natural forest, a tree planted near a private home to enhance its esthetic value is often growing in a more difficult environment. This ornamental did not choose to be planted on the upper part of a slope where the snow will constantly be removed from its base; in the forest, snow accumulates and protects the root system from deep freezing. Unlike forest trees, it is often exposed to repeated bruises by snow removal equipment. Leaves on the ground are removed to keep the lawn clean reducing available moisture and organic matter in the soil. The urban tree usually grows alone and remote from its neighbors but in natural forest the closeness of crowns help to prevent branch breakage by snow or strong winds.

Because of these disruptions, some ornamental trees should be protected so that they can survive our Canadian winters. The treatments suggested in this leaflet are not the only ones applicable but they will be used to explain the various events responsible for tree degradation after the growing season.

Soil watering in fall

When rain is insufficient or when the house roofing deviates most of the precipitation, you must water the soil surrounding small trees, at least once or twice a week from September to November. At the beginning of fall, air temperatures drop considerably with frequent windy periods. Conifers, particularly those growing near foundations, evaporate some water all winter even if their life functions are reduced. A fall drought could lead to needle reddening the following spring. Watering should be stopped as soon as the soil freezes for

several days in a row. Eastern white cedar, white and red pines, and balsam fir require this treatment more than Mugho pine or spruces.

Fertilization in fall

Sweeping leaves from under the trees in the fall helps to reduce disease and insect infection hazards the following summer. However, this practice impoverishes the soil.

Around already established trees, it is advisable to use slow release chemical fertilizer (such as 3-6-12 + Mg and B or any other fertilizer developed for the purpose) particularly when many trees or shrubs are to be treated. Spreading the fertilizer on the ground is not sufficient to reach the root system; holes should be dug, 3 cm in diameter and 30 to 50 cm deep, in a circular pattern equal in diameter to a projection of the tree crown on the ground. After depositing the fertilizer in each hole, fill the top 10 cm with sand or soil to avoid fertilizing the lawn. The recommended amount of fertilizer depends on soil fertility and texture as well as on the type of fertilizer; it varies from 100 to 500 g per cm diameter of the tree under treatment. When the root system is partly covered with garden tiles or asphalt, fertilizer might be needed yearly. However, if part of the foliage or grass is left on the ground around the tree base, fertilization every two or three years is sufficient.

At planting, compost or dried manures (such as bone meal, dried blood, etc...) can be deposited directly in the transplant furrow. However, fresh organic manure must be mixed with three times its volume of mineral soil to avoid burning the roots.

In fall, avoid using a rapid action chemical fertilizer with a high nitrogen content because most active material could be lost by outwashing when the snow melts and also early bud freezing might occur the following spring. Finally, any fertilizer supplemented with herbicides or fungicides should be avoided. Even on a lawn, they should be used with great care since residuals and noxious vapors can reach and affect roots and foliage of neighboring trees and shrubs.

Snow fence and foliage protection

Small evergreens or lower branches of larger coniferous trees require protection against strong winds and heavy loads of snow. The part of evergreen foliage above the snow level is frequently exposed to excessive loss of water when mild sunny midwinter days are accompanied by drying winds; the following spring, needles dry out and fall. A snow fence, covered or not with jute, erected in a conical shape around small conifers will reduce significantly the negative effects of winter drying and snow damage. Lower branches of larger trees will also be protected against breakage when wooden laths are positioned near the tree; care should then be taken to raise branches upwards before placing a protection measure.

When evergreens or shrubs are growing on a site exposed to snow blown by snow removal equipment, the addition of jute on laths will reduce the amount of small injuries to branches and trunks. Plastic bags, especially dark colored ones, should not be used because they modify normal respiration and evapotranspiration by needles, provoke excessive heat, and eliminate normal sunshine at the end of winter.

Protection measures should be carried out by November, before hard freezing. The height and kind of protection

needed varies according to the position of trees. A coniferous tree growing on a windy spot without snow accumulation would require jute as protection. A snow fence or any other well aerated rigid cover will suffice to protect against breakage of a small tree on a site where the snow level is expected to be high

without continuous winds. Straw, peat moss, or leaves at the tree base will also protect roots against deep freezing. Tiny branchings of deciduous shrubs can also be protected by linking branches with nylon strips or ordinary cotton or jute rope.



(Photo: A. Lavallée)

Figure 1. On conifers, a snow fence can prevent breakage of lower branches.

Figure 2. The height and shape of screens vary according to the site of the tree and the kind of foreseeable disturbances.

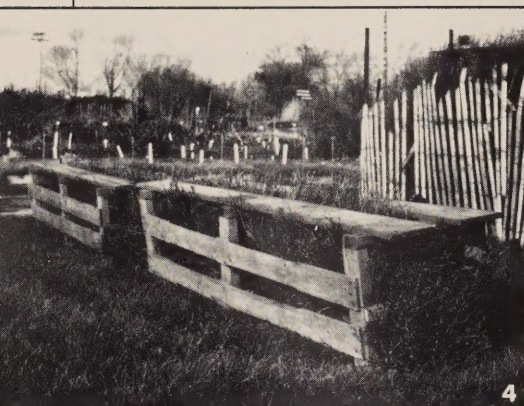


(Photo: A. Carpentier)



(Photo: A. Carpentier)

Figure 3. Jute lowers hazards of foliage drying out as a result of strong winds.



(Photo: A. Carpentier)

Figure 4. Protection for hedges can be built with boards or wooden laths.

Trunk support and protection

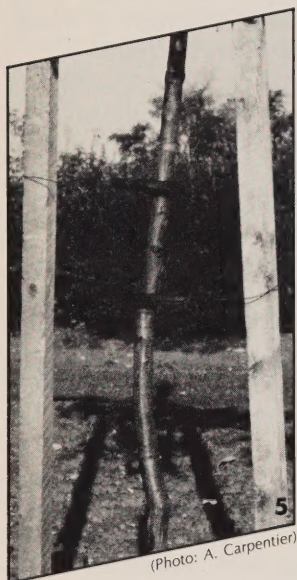
Small hardwood trees do not suffer winter drying because they have lost their leaves. However, when their trunks are less than 7 cm in diameter at the base, they cannot resist adverse conditions and support is needed. A small stake is driven into the ground near but not touching the tree. To avoid injuries and sap flow reduction, cover the bark with a rubber band or other protective material. A rope attached to the stake is

then tied around this protective material.

Trunks of larger hardwoods with bark less than 5 cm thick should also be protected from snow removal equipment jet spray. Several cankers or other diseases result from small injuries which occur when the bark is cracked by ice, small stones, or sand blown against it repeatedly. Water and bacteria penetrate and areas on the bark die out. Boards or laths around the trunk will serve as protection. To prevent boards from rubbing against the bark, it is again recommended to place two or three rubber bands (pieces of old garden hose will do) around the trunk.

This protection also lowers chances of sun scald and frost cracks often produced at the base of trees with thin and

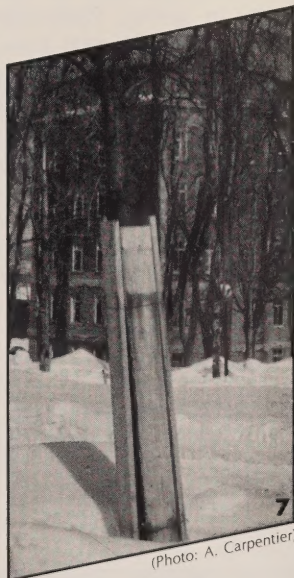
tender bark. Bark of maples, beech, and fast growing poplars often crack on the southwest side of the trunk. In March, when the sun hits these trunks, the bark temperature rises rapidly over the freezing point and at night it falls abruptly, resulting in living cells freezing and breaking. Boards or laths provide shade and reduce bark warming at the trunk base and therefore cracks are avoided.



(Photo: A. Carpentier)



(Photo: A. Carpentier)



(Photo: A. Carpentier)

Figure 5. A trunk support will prevent small trunk breakage. The trunk must be covered with a rubber band before linking it to the stake.

Figure 6. Tiny branchings of deciduous shrubs can be protected by linking branches.

Figure 7. To avoid bark injuries by snow removal equipment, hardwood trunks must be protected.

Screening against rodents

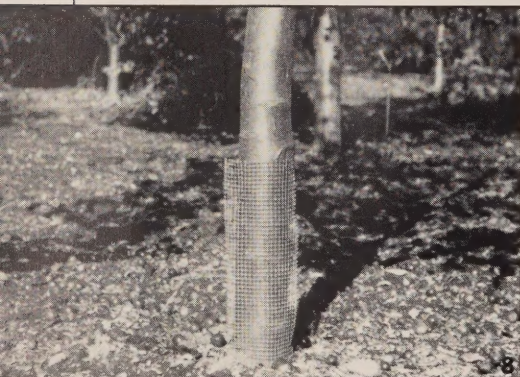
Another unpleasant surprise may lie in wait for owners of hedges, fruit trees, and other young trees when the snow melts in spring. Particularly in newly developed residential areas, when there is a large amount of snow fall, field mice established in nearby vacant fields are forced to quit their underground habitat and feed on anything they can find at ground level under the snow. If they can travel easily, they will prefer the bark of cherry, plum, or apple trees but when their movement happens to be more difficult, the tender bark of cedar, maple, or any other species can be eaten on 10 to 50 cm at the base of the tree. To prevent trunk girdling by mice, a fine wire screening or plastic spirals designed for the purpose can be placed around the lower part of the trunk. This screening

is even more necessary if rooting systems have been covered with straw or leaves. Ground covered with fir branches or other vegetative material to protect against deep freezing seems to attract small rodents when they move under the snow.

Repellents can also be sprayed or brushed over the bark. These products give a bad taste to the bark and should prevent rodent damage. However, a part of the bark may be eaten when using repellents; when a screen is used, rodents cannot reach the trunk.

Finally, after the first snowfall it is suggested to pack the snow around trees so that it will melt later at the end of winter. Rodents often circulate on the soil surface when the snow melts from the ground up.

Small to medium-sized ornamental hardwoods or fruit trees that have been completely girdled at the base can often be saved by bridge grafting in the early spring. This technique is described and illustrated in any good book on arboriculture.



(Photo: A. Carpentier)

Figure 8. A metallic screening at the base of fruit trees will prevent rodent damage.

Tree pruning

When should we prune a tree? In general, pruning should be done between August and February. Before or after this period, tree growth is active and severe pruning can result in useless sap leaks that could lead to branches drying out. Some authors prescribe cutting branches on birches and maples at the beginning of summer but only when the foliage is fully opened. Other small coniferous species such as Mugho pine are also pruned at the beginning of summer when the new shoot (candle-like) is well initiated. Usually on this species, pruning is limited to a part of the new year's shoots.

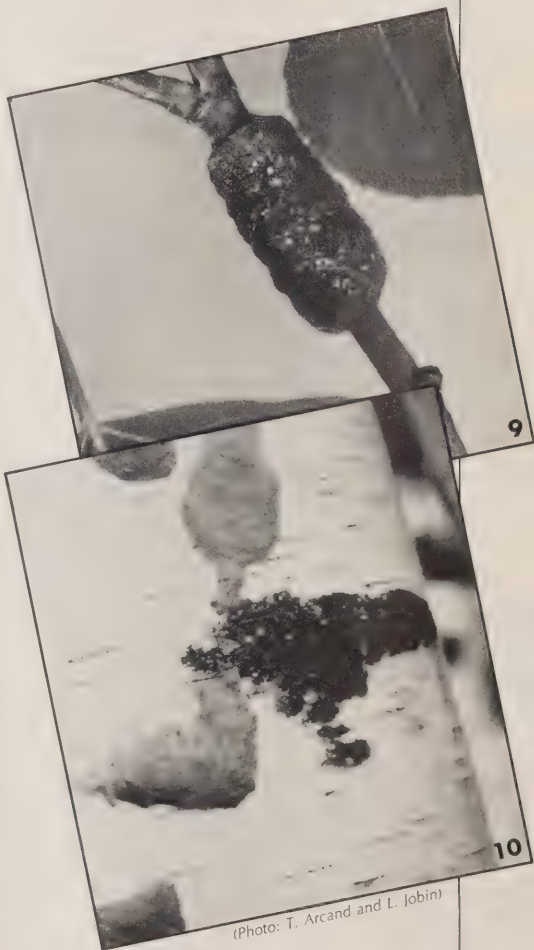
Annual pruning of small branches will help avoid penetration of decay fungi more effectively than severe pruning every 5 or 10 years. Severe top pruning often provokes the formation of unacceptable forks. On trees with an acceptable shape, pruning should be limited to dead or damaged branches or to those rubbing against one another or against a building. After planting, branches can be cut back to compensate for the loss of roots and to improve the shape of the tree.

The proper ways to prune branches were described in the leaflet CRFL-17. It must be remembered however, that pruning should be done close to living tissue to promote rapid healing of the injury.

Figures 9 and 10. Autumn tree maintenance includes the destruction of caterpillar or gypsy moth egg masses.

Protection against some insects

In addition to raking leaves, it is possible to reduce insect populations during fall tree maintenance. A careful



(Photo: T. Arcand and L. Jobin)

examination of tree branches and twigs sometimes reveals egg masses. For example, egg masses of various caterpillars may be in the shape of a brown ring, 1 to 2 cm long on aspen or fruit tree bran-

ches. Beige egg masses of the gypsy moth may be seen on the trunk of hardwoods. The destruction of egg masses will reduce the local population of defoliators.

It is difficult to escape all adverse winter conditions. However, if we invest a few hours to protect ornamentals in the fall, much irreversible damage can be avoided and tree maintenance in spring will be proportionally less.

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